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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/538,361	10/20/2005	Charles L Epstein	UPN-4566	6011
23377 7590 09/13/2007 WOODCOCK WASHBURN LLP CIRA CENTRE, 12TH FLOOR 2929 ARCH STREET PHILADELPHIA, PA 19104-2891			EXAMINER VARGAS, DIXOMARA	
			ART UNIT 2859	PAPER NUMBER
			MAIL DATE 09/13/2007	DELIVERY MODE PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

Application No.

10/538,361

Applicant(s)

EPSTEIN ET AL.

Examiner

Dixomara Vargas

Art Unit

2859

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 27 June 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-8 and 19-21 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-8 and 19-21 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- ☒ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date 08/16/07.
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- ☐ Notice of Informal Patent Application
- ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### *Claim Rejections - 35 USC § 101*

1. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

2. Claims 1-8 and 19-21 are rejected under 35 U.S.C. 101 because the step of generating a pulse would not appear to be sufficient to constitute a tangible result, since the outcome of the determining step has not been used in a disclosed practical application nor made available in such a manner that its usefulness in a disclosed practical application can be realized.

### *Allowable Subject Matter*

3. The following is an examiner's statement of reasons for allowance:
  - a. With respect to claim 1, the claim has been found allowable over the prior art of record because the prior art of record fails to teach or fairly suggest a method of synthesizing pulses for a given selective excitation profile in a system including at least one of a two-level quantum system and a subsystem described by the spin domain Bloch equation, comprising the step of producing a plurality of solutions via an inverse scattering transform producing said envelopes, including identifying and producing a minimum energy solution to said inverse scattering transform for pulses that generate the given selective excitation profile in combination with the remaining limitations of the claim.

b. With respect to claim 19, the claim has been found allowable over the prior art of record because the prior art of record fails to teach or fairly suggest a method of generating a desired frequency dependent excitation in a system including at least one of a two-level quantum system and a subsystem described by the spin domain Bloch equation using selective pulses for a given selective excitation profile corresponding to said desired frequency dependent excitation, comprising the step of producing a plurality of solutions via an inverse scattering transform producing said envelopes, including identifying and producing a minimum energy solution to said inverse scattering transform for pulses that generate the given selective excitation profile in combination with the remaining limitations of the claim.

c. With respect to claims 2-8 and 20-21, the claims have been found allowable due to its dependency on claims 1 and 19 above.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

#### ***Response to Arguments***

4. Applicant's arguments filed 06/27/07 have been fully considered but they are not persuasive.

Art Unit: 2859

5. Applicant argues the following: “The invention is a method or process and thus falls within an enumerated statutory category under 35 U.S.C. § 101. The invention is not an abstract idea, law of nature, or a natural phenomenon and thus does not fall within a judicial exception to 35 U.S.C. § 101. Accordingly, it is not necessary to determine if the practical application is by physical transformation and it is not necessary to determine if the claimed invention preempts an abstract idea, law of nature, or natural phenomenon. It is further noted that the claimed method relates to the production of pulses that when applied to a two-level quantum system or a subsystem described by the spin domain Bloch equation causes the generation of a given selective excitation profile, a feat which is clearly useful, concrete, and tangible to those of skill in the art. Withdrawal of the rejection of claims 1-8 and 19-21 under 35 U.S.C. § 101 is thus appropriate and is respectfully solicited.”

6. The examiner disagrees with applicants argument because even though the claimed invention is a statutory invention, it is also directed to a judicial exception to 35 U.S.C. 101 (i.e., an abstract idea) and is not directed to a practical application of such judicial exception (e.g., because the claim does not require any physical transformation and the invention as claimed does not produce a useful, concrete, and tangible result). The language in the claim suggest only a combination of instructions without reciting a structure associated to the procedure and lacks a tangible result at the end of the procedure. The claimed language suggesting the formation of an excitation profile is not a tangible result since said procedure is performed by the computer and not to make the profile data available to be seen or used by the computer user or operator. Instead, said data is used to produce a pulse that will produce a signal when irradiated to the region of interest. However, the claim language fails to disclose if said signal that will be

Art Unit: 2859

produced in response to said pulse sequence will produce data that will be available to the user in any form, for example, in an image, which is what one of ordinary skill in the art would have understood to be a concrete or tangible result of the procedure after improving the process of selection of pulse sequence applied. For the reasons stated above, the 35 U.S.C. 101 rejections is maintained and considered proper.

### ***Conclusion***

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dixomara Vargas whose telephone number is 571-272-2252. The examiner can normally be reached on Mon-Fri 8am-4:30pm.

Art Unit: 2859

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Diego Gutierrez can be reached on 571-272-2245. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



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